

CLAIMS

1. A semiconductor memory card which is used in connecting to an access device, comprising:

5 a host interface which transmits a control signal and data to the access device and receives a signal from the access device;

a nonvolatile memory in which a plurality of continuous sectors are grouped into an erase block as a
10 minimum unit for data erasing and which includes an address management information area and user data area;

a memory controller which controls erasing, writing and reading of data for said nonvolatile memory;

a memory for card information storage including a
15 card information storage part which stores information on access performance of said nonvolatile memory; and

a control part which controls each part on the basis of the control signal acquired via said interface, reads the information on the access performance of said card
20 information storage part and transmits the information to said access device.

2. The semiconductor memory card according to claim 1, wherein said card information storage part stores
25 first information on physical characteristics of in

said semiconductor memory card, and at least one of
second information on access condition when accessing
said semiconductor memory card,

third information on access rate of said
5 semiconductor memory card, and
fourth information on abnormal process of said
semiconductor memory card.

3. The semiconductor memory card according to claim
10 2, wherein said third information in said card information
storage part includes

a flag representing rate performance of said
semiconductor memory card as said information on access
rate.

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4. The semiconductor memory card according to claim
1, wherein said card information storage part stores at
least

first information on physical characteristics in said
20 semiconductor memory card,

second information on access condition when accessing
said semiconductor memory card, and

third information on access rate of said
semiconductor memory card.

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5. The semiconductor memory card according to claim 4, wherein

said control part, in response to a request from said access device, reads information on access condition for
5 accessing said semiconductor memory card, and information on access rate when accessing to said semiconductor memory card on said access condition from said card information storage part, and transmits the information to said access device.

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6. The semiconductor memory card according to claim 4, wherein

said control part, in response to information on access condition designated by said access device, reads
15 information on access rate when accessing the semiconductor memory card on said access condition from said card information storage part, and transmits the information to said access device.

20 7. The semiconductor memory card according to claim 4, wherein

said control part, in response to information on access rate designated by said access device, reads
information on access condition to said semiconductor
25 memory card required to meet said access rate from said

card information storage part, and transmits the information to said access device.

8. The semiconductor memory card according to claim
5 4, wherein

said control part, when reading information on access condition designated by said access device and information on access rate from said card information storage part and accessing said semiconductor memory card on said access
10 condition, determines whether or not the access rate is met and transmits a determination result to said access device.

9. The semiconductor memory card according to claim
4, wherein the third information in said card information
15 storage part includes

a flag representing rate performance of said semiconductor memory card as said information on access rate.

20 10. The semiconductor memory card according to claim 4, wherein

said card information storage part has information on access rate of said semiconductor memory for a plurality of levels of power consumption of said semiconductor memory
25 card as said third information, and

said control part, in response to a request from said access device and designation of power consumption level, reads information on access condition for accessing said semiconductor memory card and information on access rate
5 when accessing said semiconductor memory card on said access condition from said card information storage part, and transmits the information to said access device.

11. The semiconductor memory card according to claim
10 4, wherein

said card information storage part has information on access rate of said semiconductor memory for a plurality of levels of power consumption of said semiconductor memory card as said third information, and

15 said control part, in response to information on access condition designated by said access device and designation of power consumption level, reads information on access rate when accessing said semiconductor memory card on said access condition and designated electrical
20 power consumption level from said card information storage part, and transmits the information to said access device.

12. The semiconductor memory card according to claim
4, wherein

25 said card information storage part has information on

access rate of said semiconductor memory for a plurality of levels of power consumption of said semiconductor memory card as said third information, and

said control part, in response to information on
5 access rate designated by said access device and designation of power consumption level, reads information on access condition to said semiconductor memory card required to meet said access rate from said card information storage part, and transmits the information to
10 said access device.

13. The semiconductor memory card according to claim 4, wherein

said card information storage part has information on
15 access rate of said semiconductor memory for a plurality of levels of power consumption of said semiconductor memory card as said third information, and

said control part reads information on access condition designated by said access device and information
20 on designation of power consumption level and access rate from said card information storage part, determines whether or not said access rate is met when accessing said semiconductor memory card on said access condition and designated electrical power level, and transmits a
25 determination result to said access device.

14. The semiconductor memory card according to claim
1, wherein

said card information storage part has an access
5 performance basic information list which holds various
process time and process unit size in said semiconductor
memory card according to an access method, and

in response to a request from said access device,
said control part transmits said access performance basic
10 information list to said access device.

15. The semiconductor memory card according to claim
1, wherein

said card information storage part holds process unit
15 size of said semiconductor memory card, access method and
access rate in the case where access condition containing
process contents are changed, and

in response to request of said access device, said
control part transmits information on said access rate to
20 said access device.

16. An access device for accessing a semiconductor
memory card in which a plurality of continuous sectors are
grouped into a block as a minimum unit for data erasing and
25 stored data is managed according to a file system

comprising:

a card information acquisition part for acquiring
information on access performance of said attached
semiconductor memory card from said semiconductor memory
5 card;

a card use condition storage part for storing
information on access condition which can be used when said
access device accesses said semiconductor memory card and
information on access rate desirable for said semiconductor
10 memory card;

an access condition determination part for
determining access condition on the basis of the
information on access performance of said semiconductor
memory card acquired by said card information acquisition
15 part and information stored in said card use condition
storage part;

a file system control part for acquiring access
condition determined by said access condition determination
part and performing file access suitable for said access
20 condition; and

an access control part for accessing said
semiconductor memory card in response to an access request
from said file system control part.

25 17. The access device according to claim 16, wherein

said access condition determination part divides an area of said semiconductor memory card in file system access units (hereinafter referred to as FS access unit) on the basis of the information on access performance acquired
5 from said semiconductor memory card.

18. The access device according to claim 17, wherein said file system control part, when recording file data on said semiconductor memory card, determines a
10 continuous free area having a length of multiples of said FS access unit on the basis of management information of a file system constructed on said semiconductor memory card, and records the file data in said determined continuous free area.

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19. The access device according to claim 17, wherein said file system control part, when recording new file management information on said semiconductor memory card, determines whether or not another file management
20 information is recorded in the area of said FS access unit on the basis of management information of the file system constructed on said semiconductor memory card and a free area for writing new file management information therein exists, and when the free area exists, determines said free
25 area as a writing position of file management information,

and records the file management information in said determined free area.

20. The access device according to claim 17, wherein
5 said file system control part, when the areas of a plurality of said FS access units are partially used, moves data in the used areas of partially used FS access units to an unused area of the other FS access unit on the basis of management information of a file system constructed on said
10 semiconductor memory card.

21. The access device according to claim 17, wherein
said file system control part calculates the number of areas in which the whole of said FS access unit is the
15 free area on the basis of management information of the file system constructed on said semiconductor memory card.

22. An access method for accessing a semiconductor memory card in which a plurality of continuous sectors are
20 grouped into a block as a minimum unit for data erasing and stored data is managed according to the file system comprising:

a card use condition storage step for storing information on access condition which can be used when
25 accessing said semiconductor memory card and information on

access rate desirable for said semiconductor memory card;

a card information acquisition step for acquiring information on access performance of said loaded semiconductor memory card from said semiconductor memory

5 card;

an access condition determination step for determining access condition on the basis of the information on access performance of said semiconductor memory card acquired in said card information acquisition
10 step and information stored in said card use condition storage step; and

a file system control step for acquiring access condition determined in said access condition determination step and accessing a file in said semiconductor memory card
15 so as to meet said access condition.

23. The access method according to claim 22, wherein said access condition determination step determines a file system access unit (hereinafter referred to as FS
20 access unit) as a size used when accessing said semiconductor memory card according to said access condition.

24. The access method according to claim 23, wherein
25 when recording file data on said semiconductor memory

card, said file system control step determines a continuous free area having a length of multiples of said FS access unit on the basis of management information of the file system constructed on said semiconductor memory card, and
5 the file data is recorded in said determined continuous free area.

25. The access method according to claim 23, wherein
when recording new file management information
10 on said semiconductor memory card, said file system control step determines whether or not another file management information is recorded in the area of said FS access unit on the basis of management information of the file system constructed on said semiconductor memory card and a free
15 area for writing new file management information therein exists, and

when the free area exists, said space area is determined as a writing position of file management information and records the file management information in
20 said determined free area.

26. The access method according to claim 23, wherein
when the areas of a plurality of said FS access units are partially used, said file system control step moves
25 data in the used areas of partially used FS access units to

an unused area of the other FS access unit on the basis of management information of the file system constructed on said semiconductor memory card.

- 5 27. The access method according to claim 23, wherein
 said file system control step calculates the size of
an area in which the whole of said access unit is a free
area on the basis of management information of the file
system constructed on said semiconductor memory card, and
10 the calculated value is informed as a free area
length of said semiconductor memory card to an application
program.